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ABSTRACT

The purpose of this paper is to suggest a point of departure for a coherent program of vocabulary growth. The paper offers three premises for a coherent program of vocabulary growth: (1) vocabulary is best learned as it functions in communication settings, (2) teachers can more effectively stimulate vocabulary growth if they attend more deliberately to vocabulary development as a multidimensional language phenomenon, and (3) the more teachers know about vocabulary, the better they can provide for its growth. Based on these premises, a "multifeature vocabulary analysis grid" (MVAG) is suggested as a mechanism that can be used to develop understanding of vocabulary and to sort out vocabulary knowledge as a function of five variables--print form, oral form, alternate (synonymous) form, concept, and experience. The first part of the paper defines the five dimensions of vocabulary growth as they relate to communication processes and the teaching of vocabulary. The second part discusses the multifeature vocabulary analysis grid and its potential for the classroom and for research. (RL)

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TOWARDS A THEORY OF VOCABULARY TEACHING: PSYCHOLINGUISTIC IMPLICATIONS FOR VOCABULARY GROWTH

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TOWARDS A THEORY OF VOCABULARY TEACHING:

PSYCHOLINGUISTIC IMPLICATIONS FOR VOCABULARY GROWTH

It happened that during a content reading workshop, a coach recalled his attempts to teach beginning tracksters at a rural school the intricacies of running strategy. It seems that whenever he mentioned the "pole" position, certain of the team members met him with furrowed brows, rolling eyeballs, and other signals of general confusion. Finally, he asked them what the problem was. One replied, "Coach, I know about bean poles and telephone poles and a lot of other poles, but none of them make sense with what you are saying." The coach responded by entertaining a discussion of poles (and polls), going to the chalkboard to show spellings, until the team was well-educated in poles (polls) and clearly understood the contextual meaning of "pole" most appropriate to winning track.

I was impressed by the fact that without ever having had a reading or language arts methods course, the coach had diagnosed a vocabulary problem and treated it with great linguistic sensitivity. Quite naturally, he had related grapho-phonic, syntactic, and semantic information to produce vocabulary growth. Among other things he had tapped the experiential background of his students, interplaying their conceptual networks and the immediate concepts to be learned. He had built new language on known language, teaching the vocabulary item organically - in the context of the moment and as an inseparable part of total language.

It occurred to me then that when we think of vocabulary growth in education, whether consciously or not, we seem to think in terms of five variables (dimensions) of language process as it regards vocabulary: print forms, oral forms, alternate (synonymous) forms, concepts and experience.

As teachers however, expecially when we get beyond the earliest grades, we tend to focus on print forms in vocabulary development, giving primary emphasis to processing written language and incidental importance to relating oral language, incorporating alternate forms, building concepts, and modifying experience. It is not often that we exploit in a conscious way these five variables as an organic unit in either diagnosis (analysis of vocabulary knowledge and needs) or instruction (adding new words to the vocabulary store and enhancing the quality of known vocabulary).

In a study of Coleridge's "Rime of the Ancient Mariner," for example, one would surely want to understand the concept of "mariner." Knowing the easy synonym "sailor" is not enough for the modern reader who must relate to sailors and sailing ships of 1797. In fact, the context of the poem includes at least 46 sea terms ranging from such common language as "ocean" and "wave" to more technical sailing language such as "work the ropes" and "upright keel." "Ancient" as a qualifier also bears analysis in its mystical, figurative, and chronological connotations. It would serve both comprehension and motivation to probe the nautical knowledge of the class in a readiness session characterized by informal free response and manipulated discussion of critical vocabulary in the

poem. Stanzas characterizing the mariner could be pulled out to develop content (substantive) background and familiarity with linguistic forms. As a result print and oral forms are introduced in the context of natural discourse; known synonyms are related to new language forms, thereby associating previous concepts and experience with new words; in turn, previous concepts and experience are changed to better suit the needs of the immediate discourse and of the language of the poem. In the end we have a developed experience context for the poem as a basis for understanding and appreciating it as well as insights into the reading of literature itself learned by actual practice with literature. We diagnose as we observe the facility of students with particular new language forms, synonyms, and concepts. As we progress through a study of the poem, we not only attend to the more difficult word meanings, but also interrelationships between print, oral, and alternate forms; concept development, and experience extension. In that enjoyment without conscious study is the most desirable outcome of experiencing poetry, the real payoff of this perspective on vocabulary and reading literature should come in private rereadings of the poem and in readings of other poems to come.

Our long term objective has been to help the student become a more independent reader by extending his experiences in literature and vocabulary knowledge. Our immediate objective has been to promote enjoyment, understanding, and appreciation of the specific poem and its language. In so doing, we have also provided a tangible application

of and practice in using the new language students have learned. Clearly, reading competence is more than a facility with print forms: it is a product of total language competence. To improve reading performance significantly, it is necessary that instruction aim deeper than written surface structures or recognition of print and oral relationships (as important as these elements are). Meaningful change occurs at the conceptual and experiential levels.

It would follow that functional knowledge of any vocabulary item should include capacities to understand that term in reading and listening as well as abilities to generate it in writing and speaking. An effective vocabulary program, then, would consider it essential that students have a foundation based on the five dimensions of vocabulary growth and that they have meaningful practice using vocabulary in reading, writing, listening, and speaking to promote necessary structural and semantic associations with words. In any given subject area, students would be taught to use content language, thereby diminishing two significant obstacles to comprehension of content materials: technical vocabulary and content-specific peculiarities of language structure.

The purpose of the following article, then, is to suggest a point of departure for a coherent program of vocabulary growth based on at least three premises:

1. Vocabulary is best learned as it functions in communication settings.

2. We can more effectively stimulate vocabulary growth if we

more deliberately attend to vocabulary development as a multidimensional language phenomenon.

3. The more we know about vocabulary, the better we can provide for its growth. A "multifeature vocabulary analysis grid" (MVAG) is suggested as a mechanism that can be used to develop understanding of vocabulary and to sort out vocabulary knowledge as a function of five variables (print form, oral form, alternate form, concept, experience) so that questions of diagnosis, instruction, evaluation, and study can be approached in a way that will identify relationships among and between elements of lexical growth but not lose sight of whole language processes. The first part of this paper attempts to define the five dimensions of vocabulary growth as they relate to communication processes and the teaching of vocabulary; the second part discusses the multifeature vocabulary analysis grid and its potential for the classroom and research.

Dimensions of Vocabulary Growth:

1. A print form may be defined as the linguistic stimulus as it appears to the reader or the linguistic output as the writer has produced it. In the alphabetic language that is English, print forms exist as letters (graphemes) and patterns of letters (words, affixes).

The communications model that represents the written language (figure one) suggest that print is a medium for shared understanding between writer and reader as well as a catalyst for new insights and changed behaviors.

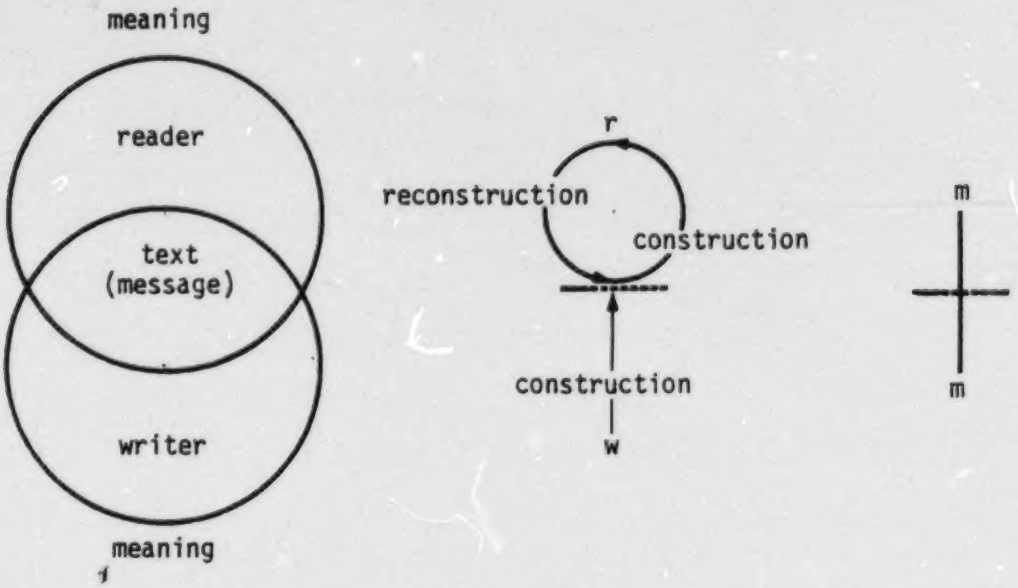

Figure one. Written Language Communications Model

In one sense, the reader's purpose is to reconstruct the author's intended message, in another sense the reader also constructs personalized meanings as he or she attempts to interpret the printed symbols. In that interpretation depends on the quality of background of experiences available to the reader, it can be said that when we interpret vocabulary, we actually bring meaning to the print rather than obtain meaning from it. The symbol system carries no intrinsic meaning--meaning is in the mind, not the print. To the degree that the contentive and linguistic experiences of writer and reader overlap, intended meaning can be understood. Their communication may be seen

as a meaning to meaning process. This is an important viewpoint to consider because it suggests that what the reader brings to the text is at least as important as what the writer brings. Put another way, the minds of our students are at least as important as those who author classroom materials. In terms of vocabulary teaching, it is as critical to develop a student's background of experiences as it is to provide appropriate materials. As background of experience is very dynamic and susceptible to change, it questions the practice of placing students at this or that grade level in all materials for all instruction. They are each in a momentary, particular state of readiness for a particular piece of print material - a readiness that can be dramatically changed in a short period of time by an effective teacher.

Figure one as drawn is static, a freeze-frame of interactions between writer and reader. To represent reading in progress, the two circles would be in fluid motion, as though on ball bearings. As the reader encounters chunks of print, for example, abilities to interpret vary as the match between experiential backgrounds of reader and writer varies. Thus, comprehension of a piece of writing is uneven as the reader moves through it - a point to consider when applying readability measures to classroom materials.

2. The <u>oral form</u> is recognized by the listener and is produced by the speaker. Oral forms exist as sounds (phonemes) and patterns of sounds. Discovering phonic relationships between oral and print forms permits the reader or writer to tap spoken language competencies

and to retrieve the meanings either has learned to identify with patterns of oral symbols.

For beginning or poor readers listening vocabularies often far exceed their reading vocabularies, therefore, we expend a good deal of energy on various "word recognition" activities, striving to increase the numbers of sight words available to the reader. In effect, we are trying to improve reading performance by providing the students mechanisms for access to acquired oral language. The payoff, however, is not in the pronunciation of printed words, but in acquired abilities to apply the meanings associated with those pronunciations to the print counterparts. Teaching print-sound relationships serves reading comprehension only as long as the student is able to perceive that meaning is the goal and does not become preoccupied with exact pronunciation. In such cases, word calling and reading anxiety often develop, sometimes resulting in poor classroom readers who read capably in nonschool settings. A point sometimes overlooked in teaching schema is that readers as early as the first grade begin processing some print for meaning directly, without the mediation of speech. In fact, the normal developmental pattern is a weaning one from speech so that proficient silent readers rely most heavily on print to meaning processing, with speech mediation being called on only in specific situations. Some research even suggests that spelling becomes the dominant cue system as print becomes more manageable to the reader. Thus, for normal readers, decoding print to speech, then to meaning via the subvocalized speech-listening

process becomes a more and more cumbersome, and, finally, frustrating process. The rule of thumb is that when the word becomes a sight word, the need for speech recognition to achieve reading comprehension ceases. It would be natural for readers to process such works directly for meaning. Phonics or word recognition instruction, therefore, would seem most useful when given within a context of actual reading and writing needs as opposed to an arbitrary schedule of teaching events prescribed by teacher's manuals or school curriculum guides made well in advance of initial student-teacher encounters.

3. Alternate forms are previously learned print and oral synonyms that the student may relate to new language forms. They may be words or phrases, standard or nonstandard, conventional or invented. Identifying common language synonyms for new technical vocabulary allows the learner to bring relevant experiences to the term, increasing chances for content-specific concept formation, retention, and effective usage.

Probing the possible other word forms and associated meanings students might have for new words to be learned often means the difference between successful and unsuccessful teaching episodes. There are few, if any, technical words in the language that cannot be translated into some common language expression closer to the concepts and experiences of students, that is, closer to their bases of meaning. Thus, teachers must explore other ways that students might have for talking about the concepts represented by the

technical language to be learned. As the connections between new language and old are being made, known meanings are associated with the new word--significantly increasing the odds that matchups between word symbols and concepts will be realized. For example, when "flammable" is associated with "burns easy", all of those burning experiments that kids do on their own surge to the conscious mind and concept-symbol association is assured.

Using alternate forms to diagnose and bring to the surface prior knowledge related to technical language would allow individual learners opportunities for discovering that which is already known and for practicing language that would appropriately express that knowledge. In addition, learning tasks such as recognizing and using other language forms and a more specialized meaning for language already known would be clearly defined.

4. As concepts and experience are so much a part of each other in vocabulary learning, they will be discussed as such here. Concepts represent an individual's categories of experience which, along with general experience, compose the meanings associated with known vocabulary items. As it relates to vocabulary, a concept may be defined as a complex of common characteristics derived from experience which can be retrieved from long term memory as word meaning. Concept formation and abilities to associate concept and word symbol in a variety of contexts are critical elements of vocabulary growth. Experience is all that the memory has retained of one's life encounters. It provides the dimensions of meaning that a word can hold for an

individual - the length, breadth, and depth of a concept, the subtleties of color surrounding a concept. Experience is at the base of all language process, and therefore, must change if language growth is to occur.

Human beings are born with a capacity for ordering common elements of experience into concepts. At some point the first concepts are formed and then countless others thereafter, one building upon another in a complex chain of associations. The whole conceptual body is continuously active, working on itself to order and reorder experience, creating new concepts, changing old ones. Experience, itself endlessly stimulated externally and by processes of conceptualization, is inherently dynamic as ideas flow one into another, altering present thoughts and generating altogether different ones. Each new experience, therefore, holds a potential for changing, to some degree, many concepts.

Concepts relate to other concepts according to certain inherent properties such as <u>similarity and difference</u>. For example, the general concept "apple" includes such qualities as taste, texture, size, and shape which at once identify it as a fruit and differentiate it from other fruits, baseballs, and duck-billed platypusses. Still, apples are similar to baseballs in shape and size, and to platypusses in that both are living things. From this view, it can be said that within each concept, there is some basis for association with any other concept. Concepts are by nature, therefore, <u>associative</u>. Further, abilities to make associations between new concepts and old is

absolutely necessary to learning new vocabulary.

The process of conceptualization is also efficient in that it can select only enough critical attributes from experience to denote an idea, that is, to form something like its dictionary definition, and reserve other aspects of the concept for its connotations, that is, personalized, often subjective associations with a word. The determination of which denotative and connotative attributes are critical fluctuates with contextual needs and the amount of depth needed to adequately process language or thought. Thus, to understand the statement, "the problem is you are trying to compare apples and oranges," one need only visualize comparative sizes, shapes, and colors but not necessarily textures, tastes, and weights. On the other hand, to determine which apple is one's favorite variety requires finer descriminations of attributes within the general concept "apple" to identify subconcepts from crabapple to Macintosh.

Cultivation of essential attributes or elements of concepts to be learned is a necessary condition of successful vocabulary programs, particularly in the case of less able learners. For they, more often than not, are disabled because they are slower to make inferences, to generalize from experience, and to associate and express symbol and meaning. That is, they have difficulty in selecting enough attributes quickly enough to form the concepts necessary for survival in the heavy concept load, written test learning units so typical of intermediate and secondary school programs. Thus, we say that their abilities to generalize are limited, their abilities to make associations

from one concept to another are limited, their abilities to remember are limited. We need to teach to these limitations by introducing more attributes of concepts to be learned, by allowing more practice time, and by making clearer associations between old and new concepts as well as between concepts in general.

The fact may very well be that if we are not directly intervening in conceptualization processes, we may be disabling, by sins of omission, as many students as Mother Nature.

The Multifeature Vocabulary Analysis Grid

The complexity of learning new words and using known ones is often hidden from fluent language users because their own language processes are so automatic and well-developed. Consequently, most attempts at vocabulary instruction are unsuccessful because they are too simplistic. Wordlists from spelling books assigned on Monday and tested on Friday are seldom heard of again and soon forgotten. Key words preceding text selections seldom survive the next chapter or story. Superficial instruction and arbitrary wordlists add few words to the reading, writing, listening, and speaking vocabularies of students. Only the most able students seem to profit from conventional vocabulary methods; in large part because they have already mastered vocabulary learning strategies. Those who need vocabulary development the most learn the least because they are seldom instructed in how to learn vocabulary and seldom provided appropriate settings in which to practice new vocabulary. In brief,

when short term vocabulary memorization is encouraged and passing a test is the main goal, little real language learning occurs. Consider also that students are challenged through each day by uncommon content and language, yet are expected to interpret and express that content in appropriate subject area language with the same ease that they use their own variety of conversational English. To even approach this expectation in the schools, most students must be guided through a careful, consistent, and continuous vocabulary program marked by many opportunities to use subject area vocabulary in meaningful communication.

Other complexities of the problem reveal themselves as we attempt to identify vocabulary needs in a particular situation. Do we mean listening, reading, writing, or speaking? Receptive or expressive? When is a given term "known"? What distinctions are embedded in motions of "having" and "recognizing" words? How is it, for example, that a person may <u>have</u> past experiences with a new word in long term memory yet not <u>recognize</u> that term as a known one? What are useful definitions or descriptions of "vocabulary" and "vocabulary instruction"?

What is needed is a way to sort out vocabulary so that questions of diagnosis, instruction, evaluation, and study can be approached in an organic way--a method that will identify discrete elements of vocabulary and interactions between and among them but not lose sight of whole language processes. One approach is to analyze vocabulary knowledge as a function of print forms, oral forms, alternate forms, concepts, and experience (as described in part one of this paper) and

to derive diagnostic and instructional strategies from a study of those five variables as they exist in the language of students.

As represented in figure two, for example, the Multifeature Vocabulary Analysis Grid explores the presence (+) or absence (-) of these variables and predicts the mathematical probability of states of vocabulary knowledge (and, by inference, the nature of vocabulary problems) that can be expected with any given term. "Vocabulary knowledge" refers to both fact and function; not only knowing symbol-concept matchups, multiple meanings, and synonym-antonym relationships, but also having facility with rules of appropriate use of the lexical item and its derivatives. Using the grid, one can speculate on the kinds of vocabulary treatment appropriate for particular teaching contexts, come to understand the dimensions of vocabulary development, evolve assessment techniques, and prepare research schemes and instruments.

Variation one identifies the ideal state of vocabulary knowledge, mastery of a term in all of its dimensions, while pattern thirty-two suggests the greatest challenge of vocabulary instruction, complete unfamiliarity with or having deficiencies in all five vocabulary features. Problem eight indicates a variety of "word caller," one who recognizes the phonic relationships between print and oral forms but does not bring meaning to either form. Problem four points out a word caller who has sophisticated this facility with surface structure forms to include the memorization of a synonym or short definition, still without an understanding of the word. For instance,

A MULTIFEATURE VOCABULARY ANALYSIS GRID

V = Variation (Word Knowledge)
PF = Print Form
OF = Oral Form
AF = Alternate Forms
C = Concept
E = Experience

V	PF	OF	AF	C	E		V	PF	OF	AF	C	E
1	+	+	+	+	+		17	-	+	+	+	+
2	+	+	+	+	-		18	-	+	+	+	-
3	+	+	+	-	+		19	-	+	+	-	+
4	+	+	+	-	-		20	-	+	+	-	-
5	+	+	-	+	+		21	-	+	-	+	+
6	+	+	-	+	-		22	-	+	-	+	-
7	+	+	-	-	+		23	-	+	-	-	+
8	+	+	-	-	-		24	-	+	-	-	-
9	+	-	+	+	+		25	-	-	+	+	+
10	+	-	+	+	-		26	-	-	+	+	-
11	+	-	+	-	+		27	-	-	+	-	+
12	+	-	+	-	-		28	-	-	+	-	-
13	+	-	-	+	+		29	-	-	-	+	+
14	+	-	-	+	-		30	-	-	-	+	-
15	+	-	-	-	+		31	-	-	-	-	+
16	+	-	-	-	-		32	-	-	-	-	-

FIGURE 2

if "matter" were the term and "substance" were learned in association with it ("matter is substance"), the student could learn to spell both items, say them, read them aloud, hear them, fill in blanks with them, and ace multiple-choice or matching tests with them - all without a developed meaning for either word. In my own classes students will often respond to the question "What is comprehension?" with an alternate form, "understanding," then be hard-pressed to explain what either term means. Their problem(s) can be viewed in a number of ways: having knowledge but not enough linguistic experience to express it (V2), having linguistic competence but insufficient conceptualization (V3), or having deficiencies in both concept knowledge and linguistic experience (V4). At the college level, I have treated this set of problems with a timely discussion using such reading process models as Kenneth Goodman postulates in Reading Process and Program (NCTE, 1970, 12-19) and a free response/question asking session to allow for creative applications, followed by a brief paper to promote synthesis - all designed to encourage conceptualization and extend experience. In addition, students become aware of the "synonym response" to questions, how to probe the respondent, and some techniques for developing background of experience. At any level the object would be to provide interactive language experiences in the four primary modes that feature natural language use. Figure three projects possible interpretations of some of the 32 variations in vocabulary knowledge.

In a like manner one could evaluate each variation according to

A Multifeature Vocabulary Analysis Grid

Sample Interpretations

	P O A C E	Interpretation
V1.	+ + + + +	Mastery of the term in all five dimensions exists. "Mastery", however, is relative to a given time and need. Student should be directed to learn additional denotations, connotations, contextual uses and recognition.
V4.	+ + + - -	Deficiencies exist in both concept development and background of experience. Direct and indirect experiences should be provided in association with encoding/decoding practice in content language. Sophisticated word calling is possible (ie: phonic proficiency with print, oral symbols of word and synonym without appropriate meanings, "matter is substance").
V7.	+ + - - +	Alternate forms are either not present or not associated with content language; conceptual development is inadequate. Given the adequate experiental background, some meaning is present but elusive, inexact. Recognition of synonyms and their meanings, contrastive concepts, additional attributes of new words should result in mastery of that term.
V8.	+ + - - -	The classic 'word-caller" pattern. Phonic relationships are known. Effective oral reading, pronunciation, writing of term possible. Meaning is not associated with term. Knowledge of appropriate alternate forms along with their meanings and related experiences should be explored. Conceptual development within content language is recommended.
V11.	+ - + - +	Although experience is adequate, conceptual development has not reached the point of providing clear meaning for print form; oral form encoding/recognition is also deficient. A review of concept attributes in a fresh setting, a "turning of the orange" activity, would allow for both a sharpening of focus and needed practice in pronunciation/listening of the word.

Figure 3

needs and experience and, finally, conclude a study of the grid with an increased awareness of vocabulary itself as a concept. This heightened conceptualization could then be translated into classroom strategies or bases for research. Practical uses of the grid also will vary according to the meanings each user brings to each of the features of the grid.

What do "+" and "-" actually mean, for example, when they are applied to each of the variables? If "+" suggests mastery and we refer to pattern one, then it must be assumed that competent students would be able to express the appropriate written and oral forms of the word in proper contexts as well as understand them when they encounter them in reading and listening. They must, in short, be able to match symbol and meaning in the various language modes. In terms of the grid and content learning, they should be able to recognize and produce the technical print and oral forms of the moment as well as appropriate alternate forms. Mastery at the conceptual level suggests that students should understand the multiple concepts (denotations) of a word when they exist and the sometimes subtle connotative differences normally associated with it and its synonyms. They also will be able to discriminate shades of meaning among synonyms and make more precise choices in written expression. The natural interaction between reading and writing, however, which <u>should</u> evolve as a consequence of attaining proficiency in one or another of the print modes may not occur if the classroom does not offer continuous and interactive practice in both modes, one reinforcing abilities learned

in the other.

The "+" could be interpreted as easily to signify partial knowledge of particular vocabulary, such as reading recognition of the print form without spelling skill, or perception of a given contextual meaning without knowledge of meaning variations. The absolute "+" might be used for evaluation in the sense of establishing targets or criteria for learning, whereas the partial "+" might be used more diagnostically to ascertain degrees of mastery prior to instruction. In any case, interpretations of the "+" must complement those of the "-", which could indicate absolute ignorance or partial deficiency in each dimension of vocabulary knowledge. One consequence of the absolute interpretation of "-" on the grid, for example, would be that half of the mathematical possibilities, at least, would be realistically impossible because no experiential background would mean no concepts nor language forms were possible. Thus, such variations as V4 and V8 could not be. If the "-" signaled a deficiency, say, of contentive experience, but not linguistic experience, then V4 and V8 would be possible. In that an absolute lack of contentive and linguistic experiences for most terms is not likely, deficiency analysis would seem most practical for using the grid.

Figure two demonstrates that given the five selected variables, there are 32 patterns of lexical knowledge mathematically possible for a vocabulary item. Put another way, for any term our students may encounter in the classroom, there are 32 states of vocabulary knowledge about that word possible among the individuals in the class.

Each variable added to the grid will double the total number of problem variations (V) produced. Six variables will yield 64, seven would produce 128, etc.

If, for example, the "experience" variable were too gross a category to yield useful information, it could be further discriminated as actual (real-life), vicarious, and linguistic. Thus, figure two could be expanded to at least eight variables, yielding 256 problem variations. If "experience" alone were being developed or investigated, however, the grid would be reduced to three variables, resulting in only eight combinations of variables describing experience (see figure four).

AE = Actual Experience
VE = Vicarious Experience
LE = Linguistic Experience

V	AE	VE	LE		V	AE	VE	LE
1	+	+	+		5	-	+	+
2	+	+	-		6	-	+	-
3	+	-	+		7	-	-	+
4	+	-	-		8	-	-	-

Figure 4

The selection and discrimination of variables is flexible and would depend on the intended use of the grid. Two obvious conclusions from such analyses, however, are (1) that vocabulary knowledge is highly complex and (2) that the teaching of vocabulary becomes increasingly more precise as we discriminate finer elements of its composition.

A formula which predicts the number of combinations in grids such as figures two and four could be written as follows:

$$C = P^{V}$$

where C = the number of combinations, P = the possibilities (+ or -), and v = the number of variables. In figure two, the formula would be written: $32 = 2^5$, whereas in figure four the formula would be written: $8 = 2^3$.

Once the number of combinations is known and the possibilities determined as either + or -, a simple way to make the grid would be to divide the number of combinations in half and, beginning on the left side of the grid, making a vertical row of plusses equal to that number. Figure two, for example, begins with a row of 16 plusses, then halves the number at the top of each succeeding row, alternating groups of plusses and minuses, until the five vertical rows have been exhausted. The process is duplicated on the minus half of the grid except that the minuses are counted from the bottom of each vertical row. In this way the first problem variation (V) always indicates full knowledge(+++++) of a word and the last problem variation is always complete ignorance(-----), to the degree that those extremes are possible, with a term.

Applications for Teaching:

As it is mainly the teacher who controls the classroom environment and whatever happens in it on the bases of her or his own intuitions and perceptions of what is appropriate content and method, the concern for instructional change must rest in teacher understanding and attitude. Realizing the complexity of vocabulary knowledge and the potential scope of its instruction through such interpretations of the multifeature vocabulary analysis grid as those suggested in figure three is one approach to gaining insights into vocabulary learning.

At the least, teachers would become acutely aware of the degree to which vocabulary deficiencies affect daily student performance in discussion, reading and writing, and be able to quickly diagnose and treat certain individual and class problems during teaching, that is, while students are in the act of learning and when instruction seems to be most impactful. Teachers would be more precise, for example, as in the probing of a student who gives a "synonym response"(matter is substance) to a request for definition to determine whether the student has a developed concept for a term or simply has acquired an association of one label with another.

One could also create grids for key terms such as those suggested in figures 5 and 6 that would map class and pinpoint individual word knowledge.

Term: denouement

Name	Print	Oral	Alternate	Concept	Experience
1. Alice Avila	- spell	+	+	+	+
2. Bob Carson	- spell - write in context	- pronun	+	- express	- literary

Figure five. Class Vocabulary Map for Key Terms

Name: Alice Avila

Word	Writing	Reading	Speaking	Listening	Alternates	Meaning	Experience
1. synthe-sis	+	+	- sis	+	combina-tion pulling together	+, but not quite sure	class ok, but don't see it in life
2. Cincin-ati	- spell	+	+	+	?	+	- actual + lang. + vicar. (WKRP!)
3. etc.							
4. etc.							

Figure 6. Student Vocabulary Chart

The individual student chart is particularly useful because it not only promotes interest in vocabulary and motivation to learn words, but also because it teaches students how to learn vocabulary. In addition, a share of the responsibility for learning is shifted to the student as teacher and students approach vocabulary study from a common, tangible data base. A substantial benefit of this cooperative approach is the communication between teacher and students about learning and vocabulary that naturally evolves from it - - an interaction that may be the most critical influence on the success or failure of classroom instruction. Immediate, ongoing, and longer term teaching decisions would result from the interplay among groups, individuals, and teacher.

Some guidelines for developing a comprehensive vocabulary program follow:

1. Understand the dimensions of vocabulary knowledge by analyzing MVAG and reading other sources.

2. Decide what word "mastery" means, then direct energies to helping students achieve it.

3. Adapt or invent student and teacher record keeping devices, involving students in at least the evolution of their own charts.

4. Educate students to your concept of mastery, encouraging their responses to it and the dimensions of vocabulary growth.

5. Discuss relationships between vocabulary learning and the quality of life in this society.

6. Provide students with instruction in how written and spoken language help to identify word meanings through such devices as context clues and illustrations, as well as in the value of glossaries, dictionaries, and other resources for vocabulary growth.

7. Make vocabulary a continuous, pervasive, central concern throughout the school year. Students and teachers can gain much satisfaction from reviewing charts periodically and noting progress. Of course, teacher enthusiasm is contagious.

To prepare for teaching a piece of content, the teacher should examine at least these questions about necessary vocabulary knowledge:

1. Which print and oral forms must be recognized for students to effectively negotiate the language of the selection? Which are key to content learning?

2. Which alternate forms are they likely to know?

3. Which concepts should they understand?

4. Are there content-specific features of these concepts which are essential to meaning?

5. What kinds of experiential background would likely develop concepts critical to learning from reading?

6. What deficiencies exist in present backgrounds of experience?

7. What can be done to provide for needed backgrounds of experience?

In sum, what are the present abilities of students to express and receive the vocabulary of the selection? Obviously, the more deficient the state of vocabulary knowledge, the less likely the chances for learning from reading.

Implications for Research

In that the ongoing classroom is the richest ground for educational research, one important research application centers on the teacher. A teacher striving to understand theory and practice can be a most effective informal researcher able to produce immediate applications to both learning and teaching as each exists in specific classrooms. Although an understanding of formal research techniques is most helpful, elaborate statistical procedures are not as necessary as objectivity, curiosity about learning processes, and an awareness of student behaviors and teaching possibilities.

Some questions about vocabulary growth and teaching for teacher-researchers and researchers in general are these: What are the possibilities for encouraging growth in each of the vocabulary dimensions? To what degree can students reliably assess their own vocabulary knowledge and represent it on a personalized chart? How effective is this multidimensional language approach to vocabulary learning as compared to other approaches? Can this approach more effectively develop one of the reading, writing, listening, or speaking vocabularies to a greater extent than the others? Can the MVAG or some-

thing like it be used in assessing vocabulary competence? What potential has MVAG for researching vocabulary knowledge, acquisition, and teaching?

The possible research questions seem endless, and with each one comes a growing awareness of our ignorance of this fundamental aspect of human learning and a deeper respect for those students who learn classroom content in spite of that ignorance. It is possible, of course, that vocabulary in school, as vocabulary in life, is best learned without the conscious intervention of a teacher. On the other hand, it is also possible that we, in our lack of appropriate intervention, have cheated an inestimable number of minds of a fuller potential for intellectual growth.